### Operational Test Readiness Review

Test Phase	Purpose	Users	Test Reviewers	Decision to Continue Project
Operational Test Readiness Review	Certify readiness for operational testing.	Targeted user community	External reviewers	HPCMP and JITC

	Operational Test Read	diness Review Ove	erview
Purpose	How	When	Expected Outcome
Ensure DoD relevance.	1. Examine the test plan against the project's approved Critical Technical Parameters (CTPs). Ensure systems and cases/data planned for testing actually test the CTPs. Refine test plan and cases/data as necessary. Obtain approval for the revisions from the SAS	Prior to the OTRR test event.	
	PM. 2. Perform a mission impact analysis of the software's tested functionality and shortfalls.	2. After the OTRR test event.	2. A requirements traceability analysis for lessons learned and follow-on work.
Determine the performance of the code.	<ol> <li>Test the code against the Initial operational Test and Evaluation (IOT&amp;E)-level CTPs.</li> <li>Evaluate the code's readiness for release to operational user community.</li> <li>Identify and provide mitigation strategies for all unmet CTPs and open shortfalls.</li> </ol>	1 and 2 at the test event.  3. After the OTRR test event	Objective measurable performance improvement in accordance with final CTPs. Elucidation of problems and weaknesses in the code.
Obtain user feedback about the usefulness of the code.	<ol> <li>Obtain extensive user feedback concerning requirements vis-a-vis the code's performance.</li> <li>Obtain user feedback concerning the code's documentation and informational materials.</li> <li>Propose modifications to manuals and instructional materials as appropriate.</li> </ol>	<ul><li>1 and 2 before and at the test event.</li><li>3. Within the test report and evaluation report.</li></ul>	Final developmental requirements analysis and improved usability.
Identify and ameliorate risks of the project.	Review PMI performance.     Document lessons learned.	1 and 2 within the test report and the evaluation report and at the OTRR.	Improved performance of subsequent software development teams.

Figure 1 Operational Test Readiness Review Overview

### 1. Purpose

The SAS PM must certify CHSSI software's readiness for Initial Operational Test and Evaluation (IOT&E) and the OTRR is the method used to efficiently determine whether certification is warranted. The purpose of OTRR is to evaluate the code and associated documentation and determine if the software and supporting documentation are ready for release to the operational community. The review also provides feedback on errors, problems, and deficiencies. Because of the costs associated with this event, only selected projects undergo OTRR. The SAS PM determines whether a project is selected for OTRR.

#### 2. Evaluator

One or more "honest brokers" who are subject matter experts using realistic user-type data will test the code in an operational environment. The CTA/Portfolio Leader nominates the testers and the SAS PM selects them. Each tester will provide input into one consolidated formal OTRR test report.

The CTA/Portfolio Leader will evaluate the test performance, key bullets in the OTRR Overview, above, as well as the Project Portfolio Leader's performance against applicable Project Management Indicators. The CTA/Portfolio Leader will prepare a formal OTRR evaluation report.

The SAS PM, in consultation with the CTA/Portfolio Leader will be the decision authority concerning the project's readiness for IOT&E.

#### 3. Method

OTRR consists of one or more test events (per tester), one **consolidated** test report, an evaluation report, and a formal review.

a. Test Event(s): The test event methodology should include formal compliance with the OTRR test plan. Because user data/scenarios will be used in an operational environment and "real" users will take part in this test event, it is especially important that the Project Principal Investigator and the CTA/Portfolio Leader ensure the systems and data/scenarios **fully test the project's final level CTPs**. A CTP or portion thereof (as in the case of multiple platform testing requirements) that has not been tested will be considered a **failed** CTP. If several people serve as testers the CTA/Portfolio Leader must ensure that the testers are briefed and organized in such a way that all CTPs are tested.

The CTA/Portfolio Leader, in consultation with the Project Principal Investigator, testers and the SAS PM, will schedule the OTRR test event(s).

The **testers** should meet with the Project Principal Investigator in order to use the software, review test results, and examine software documentation and informational and instructional materials. The testers shall:

- Review test results: Each tester is not required to perform (or witness) all reported performance runs, but should validate the reasonableness of the reported results for all platforms. For example, he/she should verify portability on *all* platforms targeted in the test plan, run several of the test cases, perform a few of the performance runs, review the validation scripts and output files, and prepare and run a few test scenarios in an operational environment. In aggregate, however, testing must include all of the Critical Technical Parameters in the test plan. This "aggregate" consists of testing done by the development team and the testing done by the OTRR testers.
- Review software development practices: Each OTRR tester should review the software source code, revision control system, and error tracking system. The OTRR testers should examine the source code to verify, to a reasonable degree, that the code functions as described in the technical description contained within the project's Software Development Plan, and the software's technical documentation. The error tracking system (or process) should be observed and tested and the revision control system should be tested and assessed. The software builds should be performed on the targeted platforms. The development team's procedures to report bugs and to notify users of errors and fixes should be closely examined.
- Examine software documentation: Each OTRR tester should review the user manual and installation documentation. The user manual should adequately describe the technical foundations of the software and describe the software's operation. The documentation and communication media should be adequate to provide a large community of users sufficient information to use the software. Installation instructions should be clear enough so that a person with moderate expertise can install the software. Instruction and information sources should be examined to determine whether they are sufficient for the user community to become familiar with and proficient in using the software.

Although not mandatory, we recommend that the CTA/Portfolio Leader personally witness the test events when possible.

b. Test Report: After reviewing the software performance, documentation, and user resources the OTRR testers should consult, "elect" one tester as the test report coordinator, and submit one consolidated written assessment of the software to the CTA/Portfolio Leader and the SAS PM. The report will be in the form of a formal written report of the test conduct and outcomes and an appraisal of user resources available in accordance with the instructions and format linked at the end of this document. (Note that there are mandatory attachments to the report, including test results that must be submitted as MS Office-compatible electronic files.)

The elected OTRR tester should coordinate the report with the Project Principal Investigator and CTA/Portfolio Leader as necessary to resolve questions, only. When finalized, each OTRR tester should sign the consolidated report.

Submit the signed <u>hard copy</u> of the report by mail directly to:

Project Manager for Software Applications Support DoD High Performance Computing Modernization Program 1010 North Glebe Road, Suite 510 Arlington, Virginia 22201-4795

Submit the electronic copy of the report along with mandatory attachments by mail (as a compact disk) to the same address cited above or by email to <a href="mailto:chssiteam@hpcmo.hpc.mil">chssiteam@hpcmo.hpc.mil</a>.

The OTRR testers should also furnish copies of the report with attachments to the CTA/Portfolio Leader and the Project Principal Investigator.

c. Evaluation Report: The CTA/Portfolio Leader will prepare a formal evaluation report in accordance with the instructions and format linked at the end of this document. It is the CTA/Portfolio Leader's option to conduct an evaluation meeting similar to that conducted for Alpha and Beta-level test and evaluation. Regardless of whether the CTA/Portfolio Leader does witness all of the actual test events and/or does conduct the evaluation meeting, he/she should examine all of the areas outlined in the overview figure, above, and should examine the Principal Investigator's performance and plans to accomplish the PMIs highlighted below. (These PMI's will "close out" the Project Leader's project management performance appraisal.) In addition, the CTA/Portfolio Leader should query users for their appraisal of the software's readiness for fielding and the sufficiency of user resources.

Table 1 Project Management Indicators Associated with OTRR

PMI	Project Principal Investigator
1-1	<ul> <li>Prepares, reviews, updates, and refines project documentation in accordance with guidelines and lessons learned.</li> <li>Maintains document version control to ensure all changes are tracked and justified.</li> </ul>
1-2	<ul> <li>Prepares, <u>reviews</u>, <u>updates</u>, <u>and refines</u> the SDP in accordance with guidelines and lessons learned.</li> <li>Ensures the development team is fully aware of and consults the SDP.</li> <li>Uses the SDP as a working document and frequently reviews it with team members for compliance, planning, and recommended refinements.</li> <li>Provides a formally reviewed edition of the plan to the CTA/Portfolio Leader at least annually.</li> </ul>
1-3	- Complies with (milestones, financial data and metrics) reporting requirements.
1-4	<ul> <li>Manages team performance and communication.</li> <li>Reviews, refines and updates the WBS when reviewing the SDP.</li> </ul>

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PMI	Project Principal Investigator
1-5	<ul> <li>Monitors development team progress and takes remedial action as necessary.</li> <li>Ensures compliance with SDP and associated contracts.</li> <li>Provides progress and remediation reports to the CTA/Portfolio Leader as required.</li> </ul>
2-1	<ul> <li>Identifies the full federal prospective user community.</li> <li>Solicits (user) requirements and input as appropriate.</li> <li>Provides timely feedback.</li> </ul>
2-2	<ul> <li>Manages error identification, fix and testing procedures and oversees compliance.</li> <li>Establishes systematic procedures to keep the team and users aware of same.</li> <li>Maintains good software development practices after initial development.</li> <li>Promulgates fixes as appropriate.</li> </ul>
2-3	<ul> <li>Establishes regular meetings with the development team to review requirements, schedules and progress and to identify problems.</li> <li>Regularly briefs CTA/Portfolio Leader and management chain.</li> </ul>
3-1	<ul> <li>Prepares, refines, and updates manuals.</li> <li>Develops, publishes, and keeps current a lessons learned repository.</li> <li>Solicits and incorporates recommended changes and improvements.</li> <li>Provides authorized users with necessary documentation and scripts as well as appropriate portions of the lessons learned repository.</li> </ul>
3-2	<ul> <li>Prepares, refines, updates, and promulgates user information and training materials.</li> <li>Obtains feedback from the user community concerning the assistance/ information provided.</li> </ul>
3-3	<ul> <li>Works with supervisor, local security personnel, and the CTA/Portfolio Leader to determine and enforce export control and security restrictions early development process and validates such restrictions as the software capability develops and export control and security guidance changes.</li> <li>Ensures hosting shared resource center systems administration staff are aware of restrictions to the code and affiliated data.</li> </ul>
3-4	<ul> <li>Provides current documentation to the CTA/Portfolio Leader as significant changes develop or after several nominal changes are made to the documentation and code.</li> <li>Promulgates fixes as appropriate.</li> </ul>

#### d. Formal OTRR

Every project which undergoes OTRR testing will also undergo the formal review. Instructions for the formal review and the documentation/materials listing are linked at the end of this document.

The SAS PM will consult the CTA/Portfolio Leader to schedule the review and participants who will need to attend. The CTA/Portfolio Leader will coordinate schedules with attendees and ensure presentation materials and other documentation required for the review are received by the SAS PM. The CTA/Portfolio Leader, Project Principal Investigator and OTRR

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testers will prepare for, attend, brief the SAS PM, participate in discussions, and respond to questions at the formal review. Although all testers should prepare to attend the formal review, the SAS PM may determine that all are not required to physically attend.

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### 4. Time Line and Responsibilities

**Table 2 OTRR Time Line and Responsibilities** 

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 1 No less than 14 weeks before the OTRR test event(s)	<ul> <li>Recommend potential OTRR testers to the CTA/Portfolio Leader. Provide qualifications/ resumes with nomination.</li> <li>Meet with the OTRR testers selected by the SAS PM to brief the project's goals and final CTP</li> <li>Review the test data/scenarios proposed by the OTRR testers to ensure they can be used to fully test the CTPs. Coordinate with the OTRR testers to expand or otherwise modify the data/scenarios as necessary.</li> </ul>	<ul> <li>Nominate OTRR testers and forward resumes to the SAS PM.</li> <li>Notify the Project Principal Investigator and OTRR testers of the SAS PM's selection.</li> <li>Discuss the proposed test data/scenarios with the Project Principal Investigator to ensure they can be used to fully test the project's final level CTPs.</li> <li>Coordinate with the Project Principal Investigator and OTRR testers to ensure testing of all CTPs are coordinated among multiple testers.</li> </ul>	<ul> <li>Agree to be nominated and commit to serving if approved.</li> <li>Meet with the Project Principal Investigator to receive a briefing concerning the project's goals and CTPs.</li> <li>Devise "Real world" data/scenarios for the test.</li> <li>Submit the data/scenarios to the Project Principal Investigator and the CTA/Portfolio Leader for review/approval.</li> </ul>	<ul> <li>Select OTRR testers and notify the CTA/Portfolio Leader of selection.</li> <li>Send a memorandum of selection to the testers with current cogent test guidance.</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 2 No less than 12 weeks before the OTRR test event(s)	<ul> <li>Coordinate with the appropriate shared resource centers staffs to ensure support for software testing. Pay particular attention to the processor availability to ensure that the CTPs can be correctly tested.</li> <li>Write the OTRR test plan and review it with the CTA/Portfolio Leader and the OTRR testers.</li> <li>Ensure code and documentation are ready for OTRR testing.</li> <li>Discuss the OTRR test schedule with CTA/ Portfolio Leader, development team, and the OTRR testers.</li> <li>Submit the test plan to CTA/Portfolio Leader.</li> </ul>	<ul> <li>Coordinate the test schedule with Project Principal Investigator, OTRR testers, and invite SAS PM to the test event(s).</li> <li>Review and validate the test plan. Consider OTRR testers' comments. Ensure that, whether or not testing is fragmented among several OTRR testers, all CTPs are tested completely. Return the test plan to the Project Principal Investigator for revision if necessary.</li> <li>Forward the validated test plan to SAS PM for approval.</li> </ul>	<ul> <li>Ensure         data/scenarios are         ready for OTRR         testing.</li> <li>Provide the Project         Principal         Investigator with         copies of         data/scenarios for         dry runs.</li> <li>Review and         comment upon draft         test plan.</li> </ul>	<ul> <li>Review test plan and notify CTA/ Portfolio Leader of deficiencies or approval.</li> <li>Accept invitation to the test event(s) or provide regrets.</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 3 No less than 10 weeks before OTRR test event(s)	<ul> <li>Follow-up/complete open actions.</li> <li>Take remedial actions necessary to obtain test plan approval.</li> <li>Provide the proposal, the latest approved SDP, installation and user manuals, and approved OTRR test plan to the CTA/Portfolio Leader and the testers.</li> <li>Provide code and installation manual to appropriate shared resource centers staffs.</li> <li>Perform dry runs on the approved test plan using the systems where OTRR testing will occur.</li> <li>Coordinate with the CTA/Portfolio Leader to resolve any systems availability problems.</li> <li>Coordinate the logistics of the test, including the testers' system access as necessary.</li> <li>Coordinate date, time and location of the OTRR formal review with the testers and CTA/Portfolio Leader.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Coordinate with Project Principal Investigator concerning SAS PM test plan decision and supervise remedial action as necessary.</li> <li>Monitor test coordination and progress; assist the Project Principal Investigator in ensuring appropriate shared resource center support (e.g., HPC system availability, testing allocations, etc.) and testers' access.</li> <li>Provide electronic (MS Office compatible) copy of the current approved SDP and OTRR test plan to SAS PM.</li> <li>Coordinate date, time and location of the formal review with the Project Principal Investigator and testers.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Verify system access as necessary.</li> <li>Perform dry runs with the approved test plan using the systems where OTRR testing will occur.</li> <li>Provide feedback as appropriate to the CTA/Portfolio Leader and Project Principal Investigator.</li> <li>Coordinate date, time and location of the formal review with the CTA/Portfolio Leader.</li> </ul>	<ul> <li>Follow-         up/complete         open actions.</li> <li>Schedule the         date, time and         location of the         formal review         and determine         who must         attend the         event(s).</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 4 No less than 6 weeks before OTRR test event(s)	<ul> <li>Follow-up/complete open actions.</li> <li>Confirm OTRR test day and time with CTA/Portfolio Leader,         OTRR testers, and shared resource centers staffs where testing will occur.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Monitor test coordination and OTRR test preparation progress.</li> <li>Assist in resolving questions and coordination problems.</li> <li>Confirm test schedule with Project Principal Investigator, testers and SAS PM.</li> <li>Ensure any necessary funding is in place for testers' test and OTRR formal review travel.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Confirm test schedule with Project Principal Investigator and CTA/Portfolio Leader.</li> <li>Examine software source code, revision control system, error tracking system and installation and user manuals.</li> <li>Take notes of strengths and deficiencies noted.</li> </ul>	- Follow- up/complete open actions.
Step 5 No less than 3 weeks before OTRR test event	- Follow-up/complete open actions.	- Follow-up/complete open actions.	<ul> <li>Follow-up/complete open actions.</li> <li>Discuss user requirements, documentation and performance with other users.</li> <li>Take notes of strengths and deficiencies noted.</li> </ul>	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 6 OTRR Test Event	<ul> <li>Assist the testers as requested.</li> <li>Witness the OTRR test(s).</li> <li>Discuss requirements, documentation and performance with the OTRR testers.</li> <li>Take notes of discussion items and deficiencies noted.</li> </ul>	<ul> <li>Witness the OTRR test(s) if feasible.</li> <li>Discuss user requirements, documentation and performance with the testers and other users.</li> <li>Discuss PMI performance with the Project Principal Investigator.</li> <li>Provide oral feedback to Project Principal Investigator and development team.</li> <li>Develop notes of test conduct, test results, and discussion.</li> </ul>	<ul> <li>Conduct the OTRR test.</li> <li>Discuss requirements, documentation and performance with the CTA/Portfolio Leader and the Project Principal Investigator.</li> <li>Take notes of discussion items and deficiencies noted.</li> <li>Provide oral feedback to Project Principal Investigator and the CTA/Portfolio Leader.</li> </ul>	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 7 Within 2 weeks after OTRR test event(s)	<ul> <li>Develop lessons learned for future work.</li> <li>Take action in accordance with OTRR testers' oral feedback.</li> <li>Follow-up/complete open actions.</li> <li>Prepare project overview and programmatic portions of OTRR formal review presentation materials and forward copy to the CTA/Portfolio Leader for comment.</li> <li>Provide the CTA/Portfolio Leader with the documentation required for evaluation report and OTRR review.</li> </ul>	<ul> <li>Review and comment upon the OTRR testers' report.</li> <li>Write the evaluation report, which comments upon the OTRR testers' report and provides an evaluation of the project team's PMI performance and other pertinent data. Include exit criteria, remedial actions and suspense schedule (if necessary). Develop lessons learned.</li> <li>Prepare OTRR review presentation materials.</li> </ul>	- Write assessment Provide a formal written report of test results and discussion conclusions as well as mandatory attachments to SAS PM with copies to the CTA/Portfolio Leader and Project Principal Investigator.	- Not applicable.

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 8 No more than 4 weeks after OTRR test event	<ul> <li>Follow-up/complete open actions.</li> <li>Develop lessons learned for future work.</li> <li>Take action in accordance with test report and CTA/Portfolio Leader's comments.</li> <li>Coordinate date, time and location of the OTRR formal review with the testers and CTA/Portfolio Leader.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Provide the formal written evaluation report to the SAS PM with copy to the Project Principal Investigator. Include Project Principal Investigator and own presentation materials.</li> <li>Coordinate date, time and location of the formal review with the Project Principal Investigator and testers.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Coordinate date, time and location of the formal review with the CTA/Portfolio Leader.</li> </ul>	<ul> <li>Schedule the date, time and location of the formal review and determine who must attend the event.</li> <li>Coordinate formal review particulars with the CTA/Portfolio Leader.</li> <li>Provide feedback to the CTA/Portfolio Leader concerning the adequacy of reports, documentation, data and presentation materials.</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 9 No less than 3 weeks before OTRR review	<ul> <li>Follow-up/complete open actions.</li> <li>Revise as necessary and finalize presentation materials.</li> <li>Forward presentation materials to the CTA/Portfolio Leader.</li> </ul>	<ul> <li>Follow-up/complete open actions.</li> <li>Provide guidance to the Project Principal Investigator and testers concerning OTRR formal review materials.</li> <li>Ensure all materials required for the review have been received by the SAS PM.         Coordinate with the Project Portfolio Leader and the testers as necessary to complete the review package.     </li> </ul>	<ul> <li>Revise as necessary and finalize review materials.</li> <li>Forward materials to the CTA/Portfolio Leader.</li> </ul>	- Not applicable.
Step 10 No less than 2 weeks before OTRR review	- Follow-up/complete open actions.	- Follow-up/complete open actions.	- Follow-up/complete open actions.	<ul> <li>Follow-         up/complete         open actions.</li> <li>Consult         documentation         and         presentation         materials prior         to the review.</li> </ul>

Timeline	Project Principal Investigator	CTA/Portfolio Leader	OTRR Tester	SAS PM
Step 11 No less than 1 week before OTRR review	- Follow-up/complete open actions.	- Follow-up/complete open actions.	- Follow-up/complete open actions.	- Follow- up/complete open actions.
Step 12 OTRR review	<ul> <li>Attend the formal review.</li> <li>Brief project overview.</li> <li>Brief programmatic issues.</li> <li>Respond to questions.</li> </ul>	<ul> <li>Attend the formal review.</li> <li>Brief PMIs, impact and lessons learned.</li> <li>Respond to questions.</li> </ul>	<ul> <li>Attend the formal review review.</li> <li>Brief test results and user requirements feedback.</li> <li>Respond to questions.</li> </ul>	<ul> <li>Conduct the OTRR formal review.</li> <li>Provide oral feedback.</li> </ul>
Step 13 No more than 2 weeks after OTRR review	- Take action in accordance with SAS PM's oral comments.	- Take action in accordance with SAS PM's oral comments.	- Follow-up/complete open actions.	- Provide written formal decision and exit criteria with suspense dates (if appropriate).
Step 14 No more than 4 weeks after OTRR review	- Take action in accordance with SAS PM's decision.	- Take action in accordance with SAS PM's decision.	- Not applicable.	- Not applicable.

5. Instructions and Document Formats: Instructions and document formats are linked below:

Document/Item	Intro	Alpha	OTRR	APP A	APP B	APP C	APP D
Introduction							
Test Guidance			PDF				
Test Plan Guidance			PDF				
Test Plan Template			DOC				
Test Report Guidance			PDF				
Test Report Template			DOC				
<b>Evaluation Guidance</b>		PDF					
Evaluation Report Guidance			PDF				
Evaluation Report Template			DOC				
Review Guidance			PDF				
CHSSI Metrics				PDF			
Abbreviations and Acronyms					PDF		
Prototypical Test Results Matrix						XLS	
Prototypical Review Briefing Template							PPT